



COURSE: Wastewater Treatment Plant Management and Design

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Language: Italian

ECTS: 9

n. of hours: 81

Academic year: 2014/2015

Campus: Potenza

Semester: I

TOPICS

1) Wastewater Treatment Plant Project

Analysis of the relevant legislation and regulation of discharges. Assessment of treatment needs and identification of optimal schemes. Dimensioning criteria of technological units of treatment and assessment of the costs of construction of complex patterns.

2) Wastewater Treatment Plant Management

Evaluation of needs and energy costs. Evaluation of consumption of materials and reagents for the treatment of water. Organization of the personnel operating in the plant. Systems for process monitoring and environmental impact of installations. Elements of safety in the workplace.

TEACHING METHODS

Theoretical lessons

Tutorials in classroom

Tutorials in laboratory

Project works

Technical visits

Other activities (please specify) _____ seminars _____

TEXTBOOKS

Metcalf & Eddy. Ingegneria delle acque reflue - Trattamento e riuso 4/ed. McGraw-Hill Education

Luca Bonomo. Trattamenti delle acque reflue. McGraw-Hill Education

Notes of teacher

ON-LINE EDUCATIONAL MATERIAL

web address: At the beginning of the course a shared folder with the students is created to exchange didactic materials and data for tutorials.

LEARNING OUTCOMES

The aim is acquire the skills needed to deal with problems planning and management of the main wastewater plant. To know the relevant legislation, the authorization framework and disciplinary aspects of activities related to wastewater treatment and supplying. To develop a critical ability to address issues of planning and location plant at significant environmental impact risk.

REQUIREMENTS

None

EVALUATION METHODS

Intermediate verifications

Written examination

Discussion of a project work

Practical test

Oral examination

Other methods (please specify) _____

DETAILED CONTENT

Regulation of discharges, authorization aspects and administrative controls. Qualitative and quantitative characterization of wastewater. Elements of dimensioning of the sewers and connection with the treatment plant. Introduction to the techniques of treatment. Analysis and choice of treatment alternatives. Primary treatments. Grilling sand separation, oil removal, primary sedimentation. Criteria for the selection and dimensioning of the biological treatment units. Aerobic oxidation, nitrification-denitrification, biological phosphorous removal. Chemical removal of phosphorus and other inorganic



pollutants. Biological processes with suspended biomass and biofilm. Treatment of refinement. Disinfection, filtration, activated carbon adsorption, ozonation. Processes of natural purification. Lagooning, phytoremediation, infiltration. Treatment of sludge. Thickening, conditioning, dehydration, stabilization and disposal. Criteria for the location of plant, centralization and management of plant in remote control.

Development of the project for a wastewater treatment plant. Development of the project for a wastewater treatment plant for waste water. Elements of structural dimensioning of the main unit, design hydraulic circuits, dimensioning of the electromechanical units, construction cost estimates.

Managerial and financial issues related to the operation of a sewage treatment plant. Assessment of energy consumption and reagents process, personnel costs, organization of the ordinary and extraordinary maintenance, management and disposal of sludge, monitoring procedures and safety in the workplace.

SEMINARS BY EXTERNAL EXPERTS YES x NO

FURTHER INFORMATION
